

PREFACE

This book entitled *Digital and Analogue Electronics: Circuits and Systems* intentionally cover both digital and analogue electronics design and optimizations approaches, which is the key features that distinguishes it from other existing books. It focuses on theoretical aspects of various designs as well as testing both state-of-the-art digital and analogue integrated circuits and system.

The book also highlights the unique design issues, which facilitates the reader to be able to understand more advanced researches in a good pace. Furthermore, each chapter and subject area is begins with basic principles and fundamentals and goes into further details with selected design examples with an in depth discussions, and up-to-date references.

In summary, the first five chapters of this book cover design approaches and performance evaluations of various digital applications. These includes an efficient design approach for partial product in multiplication operations, performance optimization strategies of a 4-bits Carry-Save Adder (CSaA), performance evaluation of a Quadrant-Based Multi-Octagon search (QBMO) algorithm against existing motion estimation algorithms, design and development of an encryption chip design using the Information Concealment Engine (ICE) encryption algorithm and finally presents potential hardware platform i.e. Field Programmable Gate Arrays (FPGAs) technology for prototyping the aforementioned hardware designs.

The subsequent chapters present the basic of low noise amplifier design, an analogue baseband chain for a synthetic aperture radar receiver, four different approaches of designing MMIC low noise amplifiers and low frequency noise measurement system. The floating gate transistor and its applications in various analogue signal processing circuits and overview of current trends in low voltage design techniques are covered in the last two chapters.

Read this book to learn more about the design techniques for realizing digital and analogue circuits and systems. This book is a comprehensive reference and well-founded material for students as well as electronics engineers and researchers in academia and industry working in the areas of circuits and systems design.